

Q1: Wed.  
7 Sep $\alpha$ A map  $f: \Omega \rightarrow \Lambda$  is an *involution* if

[Imagine 2 blank lines].

 $\beta$ Write the truth-table for  $B \vee [\neg B \Rightarrow C]$ .Q2: Fri.  
9 Sep $i$ A formal defn of  $y \mid z$ , i.e. “ $y$  divides  $z$ ”, is:[Hint: What kind of objects are  $y, z$ ? What QFR(s) do you need?]

ii

If  $b \mid c$  and  $b \mid c$ , must  $b = c$ ?  $T$  $F$ 

ii

If  $b \mid c$  and  $x \mid y$ , must  $[b+x] \mid [c+y]$ ?  $T$  $F$ Q3: Wed.  
14 SepMay lightning  $\nmid$  strike this table! (I.e, please fill in.)

| $n$ | $r_n$ | $q_n$ | $s_n$ | $t_n$ |
|-----|-------|-------|-------|-------|
| 0   | 100   | —     | 1     | 0     |
| 1   | 23    |       | 0     | 1     |
| 2   |       |       |       |       |
| 3   |       |       |       |       |
| 4   |       |       |       |       |
| 5   |       |       |       |       |
| 6   |       |       |       |       |

So  $\text{Gcd}(100, 23) = \underline{\hspace{1cm}} = [\underline{\hspace{1cm}} \cdot 100] + [\underline{\hspace{1cm}} \cdot 23]$ .Q4: Fri.  
16 SepMod  $K := 71$ , the recipr.  $\langle \frac{1}{23} \rangle_K = \underline{\hspace{1cm}} \in [0..K)$ .[Hint:  $\nmid$ ] So  $x = \underline{\hspace{1cm}} \in [0..K)$  solves  $4 - 23x \equiv_K 1$ .Q5: Wed.  
21 Sep $\alpha$ Mod  $K := 174$ , the recipr.  $\langle \frac{1}{55} \rangle_K = \underline{\hspace{1cm}} \in [0..K)$ .[Hint:  $\nmid$ ] So  $x = \underline{\hspace{1cm}} \in [0..K)$  solves  $4 - 55x \equiv_K 6$ . $\beta$ For each index  $k$ , the  $k^{\text{th}}$ -row in LBolt satisfies (ITOf the  $r, q, s, t$  vars) equation: [Subscripts readable!]Q6: Fri.  
30 SepDefine fncs  $G, P: [1..12] \rightarrow \mathbb{N}$ , where  $G(n)$  is the number of letters in the  $n^{\text{th}}$  Gregorian month [so  $G(2) = 8$ ; the 2<sup>nd</sup> month “February” has 8 letters], and  $P(n) := 13 - n$ .The set of posints  $k$  with  $G^{\circ k}(1) = G^{\circ k}(2)$ 

is

Let  $f := P \circ G$ . Then  $f^{\circ 2}(11) =$ Q7: Mon.  
17 OctOn  $\mathbb{Z}_+$ , write  $x \$ y$  IFF  $xy < 0$ . So \$ is CircleTransitive  $T$   $F$ . Symmetric  $T$   $F$ .Reflexive  $T$   $F$ .On  $\mathbb{Z}$ , say that  $x \nabla y$  IFF  $x - y \leq 1$ . Then  $\nabla$  is:Trans.  $T$   $F$ . Symm.  $T$   $F$ . Reflex.  $T$   $F$ .

(Be careful on both parts!)

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(Be careful on both parts!)

QBonus: Repeating decimal  $2.3\overline{541}$  equals  $\frac{n}{d}$ , where $n \perp d$  are  $n = \underline{\hspace{1cm}}$  and  $d = \underline{\hspace{1cm}}$ .Q8: Wed.  
30 Nov*Solve all of the World's Problems.*